2003 REPORT OF ACTIVITY BY THE VIRGINIA AQUATIC RESOURCES TRUST FUND

August 6, 2004

I. INTRODUCTION

This report outlines accruals, impacts, and mitigation projects associated with the Virginia Aquatic Resources Trust Fund (the Fund), an in-lieu-fee mitigation partnership administered by The Nature Conservancy of Virginia (TNC) and the Norfolk District Corps of Engineers. The Fund is one of several compensatory mitigation options available to permittees for impacts to wetlands and other waters, available for use after avoidance and minimization of impacts to these aquatic resources. Applicants can choose to make a payment to the Fund in lieu of other forms of compensatory mitigation. Although compensatory mitigation is often a requirement in permits, use of the Fund is completely voluntary on the part of applicants. The Fund seeks "no net loss" of aquatic resource acreage and functions using a watershed approach. The purpose of this report is to advise the Public of the status of the Fund and to address the items referenced in the Virginia Department of Environmental Quality's (DEQ) Virginia Water Protection (VWP) Regulations at 9 VAC (25-210-115E) specifically:

(1) an accounting that details "contributions received" and
(2) the "acreage and type of wetlands or streams preserved, created, or restored in each watershed with those contributions, as well as
(3) the "mitigation credits contributed for each watershed of project impact".

This report updates the 2002 information and also provides historic information from 1995 through 2003. The information is broken into two main sections, wetlands and streams, in addition to sections for monitoring and general information.

II. WETLANDS

A. WETLAND CONTRIBUTIONS RECEIVED

Since the Fund's inception in August of 1995, **368** projects have used the Fund as mitigation for permitted wetland impacts. The **368** permitted projects resulted in **147.52** acres of wetland impacts over the Fund's nine years of operation (stream information is addressed in section III below). For these wetland impacts, the Fund accrued contributions totaling **$11.015** million. The impacts, contributions, and number of permits using the Fund each year are shown in Table 1 below.

TABLE 1: WETLAND IMPACTS, REVENUES, AND PERMITS BY YEAR

YEARS	IMPACTS (in acres)	REVENUES	# of PERMITS	AVERAGE IMPACT PER PERMIT
1995	2.9	$65,000.00	2	1.45
1996	20.59	$473,225.00	16	1.29
1997	26.27	$1,320,918.00	22	1.19
1998	16.59	$827,225.00	26	0.64
1999	13.99	$999,468.30	36	0.39
2000	7.51	$849,616.71	35	0.21
2001	12.29	$1,277,159.70	59	0.21
2002	26.35	$2,584,684.50	97	0.27
2003	21.11	$2,617,986.42	75	0.28
9	**147.60**	**$11,015,283.63**	**368**	**0.66**

The above numbers demonstrate an increasing trend in acres impacted during the 1995 to 1997 timeframe, decreases from 1997 to 2000, and increases during the 2001 to 2003 timeframe. These trends may be explained by several factors, including changes to Nationwide Permit thresholds, changing Nationwide Permit mitigation requirements, and an increasing number of permits with minor impacts accomplishing mitigation by use of the Fund. The number of permits that used the Fund to fulfill compensatory mitigation requirements increased during 1995 to 1997, remained relatively constant from 1997 to 2000, but increased significantly from 2001 to 2003. The 2001 to 2003 increases in acres of impacts are explained by the significant increase in numbers of issued permits using the Fund for mitigation during that timeframe. However, the average impact per permit remained relatively low and constant. A greater number of General Permits that historically may not have required compensatory mitigation, including those from the VWP program, now require it, including a number that mitigated by payment into the Fund. Finally, due to the Fund's successes, there has been greater acceptance of the Fund as a mitigation option by Agency Project Managers and applicants. Although it appears that higher numbers of permits and greater impacts have been the trend in recent years, the Trust Fund has provided greater mitigation value by producing more mitigation acres to account for those impacts in strategic locations.

The dollars required as in-lieu-fee mitigation per acre of impacts have, on average, increased over the life of the Fund. While this higher contribution amount likely serves to encourage applicants to avoid and minimize wetland impacts, many applicants find the Fund to be less expensive or more efficient than accomplishing mitigation on their own, as evidenced by their willing participation in the program. Available mitigation bank credits and prices increased over the Fund's life, and may also contribute to this trend. The Corps generally estimates in-lieu-fee contributions at a slightly higher rate than the cost of credits from mitigation banks. This practice helps ensure that mitigation for permitted impacts will be accomplished. This is because sufficient funds would be available to purchase bank credits if Trust Fund mitigation projects for specific impacts fail to materialize. Decisions to purchase bank credits are made on a case-by-case basis by the program's partners and after consultation with other agencies.

Some of the revenue figures noted above differ from the yearly totals shown in Table 1 of the 2002 report. This is because the 2002 report relied upon revenue records kept by the Corps and was not cross-referenced with data from TNC, and that 2001 and 2002 stream revenues were combined with wetland revenues. For this report, a full audit and reconciliation of the Corps and TNC revenue data was accomplished to produce the numbers herein. Stream revenues were segregated and are shown in Table 4 below.

B. IMPACTS, REVENUES, AND ALLOCATED FUNDS BY WATERSHED

The figures below in Table 2 are provided for each river basin in Virginia. The following explanations should be considered when reviewing the data found in the table:

BASIN: The major river basins are listed, generally as delineated per the Virginia DEQ 303d list and maps.

GENERAL refers to mitigation expenses that are spread over a number of projects, such as labor costs, equipment costs (such as monitoring wells), and other general costs.

IMPACT ACRES: This column shows the acres of impacts to wetlands and open water areas. Acreages greater than 5 are shown in bold text.

REVENUES: These currency figures are the amounts contributed per basin from 95-03.

ALLOCATED: This column shows the funds per basin that have been allocated to mitigation projects.

RESTORATION: This refers to all wetland restoration acres, including those already restored along with those acquired but not yet restored, regardless of the stage of restoration or monitoring.

PRESERVATION/ENHANCEMENT: This refers to all wetland acres that were acquired and preserved or enhanced.

UPLAND BUFFERS: These are acquired and preserved forested buffers plus upland buffer acres that required restoration from crop or cleared land to convert them to forested buffers.

TOTAL ACRES: This refers to all mitigation acres, regardless of type or stage of completion.

Table 2 provides information on general trends for the different basins and consolidates some of the mitigation categories. The mitigation categories are more thoroughly separated and reported in greater detail as to type and stage of completion in Table 3 below.

TABLE 2. 1995-2003 IMPACT'S, FINANCIALS, AND MITIGATION BY BASIN

BASIN	IMPACTS	FINANCIAL INFORMATION		MITIGATION			
BASINS	IMPACT ACRES	REVENUES	ALLOCATED	RESTORATION	PRESERVATION/ ENHANCEMENT	UPLAND BUFFERS	TOTAL ACRES
Atl Ocean	0.51	33,934.20	0.00				
Shenandoah	2.06	196,896.88	0.00				
Potomac	3.98	705,510.12	150,000.00	**40**	**50**	**50**	**140**
Ches Bay	**12.41**	1,194,054.91	357,036.00	**15**	**34**	**49**	**98**
Rappahannock	**7.13**	1,015,238.00	1,316,275.00		**80**		**80**
York	**8.04**	1,060,917.72	40,000.00	**[70]**	**15**		**15**
Upper James	2.88	127,080.25	0.00				**0**
Mid James	**16.84**	1,460,357.12	366,450.00	**15**		**125**	**140**
Lower James	**63.70**	4,125,292.30	1,726,292.00	**92.3**	**332**	**40**	**464.3**
Roanoke	1.97	185,880.80	0.00				**0**
Chowan	**27.27**	863,933.00	1,401,351.00	**225**	**1280**	**88**	**1593**
New	0.06	2,761.33	0.00				**0**
Tennessee	0.75	43,427.00	0.00				**0**
General			150,481.00				
TOTALS	**147.60**	**$11,015,283.63**	**$5,507,885.00**	**387**	**1791**	**352**	**2530**

The Fund prioritizes its search for compensation sites within basins by generally using five acres of permitted impacts as a threshold. The Nature Conservancy uses this prioritization, to the maximum extent practicable, to initiate projects within basins that have sustained significant impacts. The Corps and TNC are also sensitive to temporal losses in basins with impacts less than five acres that may take extended periods of time to accumulate that amount. Some basins with low total impacts will need to be addressed prior to reaching the five-acre threshold.

Where possible, the Fund targets mitigation projects in "Portfolio Areas," which TNC and its partners have identified as important to the conservation of biodiversity in Virginia. In this approach, there is an effort to select sites within an identified conservation framework that may provide greater ecological benefit than would an isolated project specific or other mitigation site with the sole purpose of wetland restoration to Corps 1987 Delineation Manual standards. An example of the success of this approach is demonstrated in southeastern Virginia where the Fund has contributed to the protection of the Northwest River conservation corridor, which has been identified by federal, state, local and environmental organizations as a conservation priority. Over 1,500 acres of land in this corridor have been protected by the Fund, including

approximately 200 acres of wetland restoration. This approach adds landscape context and site proximity to the site selection process.

A primary goal of the Fund is to address "no net loss" of wetland acres in each basin, by a minimum 1:1 restoration ratio for the impacts along with other mitigation types and measures. The 1:1 restoration plus preservation goal is being met in the Chowan, Lower James, Middle James, and Chesapeake Bay basins, all of which have experienced significant impacts. Although the monitoring programs for all of the acres referenced have not been completed or released as final, the results so far on the majority of the sites have been favorable (this approach is consistent with mitigation banks and project specific mitigation sites). In most of the basins shown above that have sustained significant impacts, the Fund has acquired more mitigation acres than what is normally obtained through other mitigation options when viewed in light of the standard, accepted compensatory mitigation ratios.

As with mitigation banks and project specific mitigation projects, the Fund obtains mitigation credit for activities other than restoration, including wetland preservation, wetland enhancement, upland buffer restoration and preservation, along with other less traditional types of mitigation. These other types of mitigation are usually in addition to at least a 1:1 restoration ratio required to accomplish "no net loss" of wetland acreage and functions and to provide for ecologically valuable project enhancements.

Based upon increases in impacts from 2002 to 2003, the York and Rappahannock basins became a higher priority for acquisition of new mitigation sites. The York basin exceeded the five-acre threshold in 2002 and was therefore a higher priority for a mitigation project. Although no York Basin project was acquired in 2003, a project with roughly 70 acres of potential wetland restoration was secured in the York basin in early 2004 (hence the bracketed figure in Table 2 and failure to add these acres to the total acres for 2003). The Rappahannock basin exceeded the five-acre threshold in 2003, so it will become a higher priority for project acquisition. One favorable restoration project on the Rappahannock, which had been under negotiation for some time, instead became a mitigation bank in 2003.

Because a large amount of the impacts for which payments were made to the Fund occurred in the Lower James Basin, the Corps and TNC continue to regard it as a high priority basin for acquisition of mitigation projects. To address these impacts, TNC acquired in 2002 the Stephens tract with 70 potential restoration acres and 110 preservation acres serving the Lower James Basin. Restoration of this tract is now complete. Hydrology and vegetation monitoring has been initiated and is ongoing.

Although the Fund is currently seeking and negotiating mitigation projects in the three basins noted above, doing so does not mean that the other basins are neglected or that projects in basins with lower amounts of impacts will be declined. The Roanoke, Shenandoah, and Upper James basins are accumulating impacts that will need attention in the near future. These impacts will be addressed as projects are located or become available. In addition, the Fund recently obtained approval (mid 2004) to hire a full time Land Protection Specialist to search for and acquire wetland and stream mitigation project sites on a full time basis. This will provide for more projects in basins with higher impacts, but also will address basins with lower impacts, in order to reduce temporal losses prior to reaching the five-acre threshold.

Approximately 90% of the attempted mitigation is targeted for palustrine forested wetlands as described in the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979), with the remaining 10% divided among five other classes. Primarily, the impacts (and mitigation acres) addressed by the Fund involve palustrine forested wetlands or palustrine emergent wetlands. Many of the impacts classified as emergent wetlands are artificially kept in that state, with forest community being the natural condition if artificial manipulation were stopped. Therefore, using forested mitigation for many of these emergent impacts may be more appropriate.

Minor amounts of tidal wetland and open water impacts have resulted in payments into the Fund, primarily in the Lower James and Atlantic Ocean (Eastern Shore) basins. In 2002, the Fund paid for the construction of an oyster reef in the Elizabeth River and currently is reviewing tidal mitigation sites in the Lower James Basin for restoration suitability. A project to restore submerged aquatic vegetation in the Atlantic Ocean basin is currently under consideration. The Corps and TNC continuously review additional sites as potential restoration projects.

C. WETLAND AND OTHER MITIGATION PROJECTS

The Fund has 20 wetland mitigation sites in its project portfolio located within a number of watersheds (the Stephens tract is split into two different watersheds and is listed twice). Five of these projects involve solely preservation, and 15 involve some level of restoration or enhancement of wetlands. Construction and planting have been completed on 13 of the 15 restoration projects, and monitoring for hydrology and vegetation has been initiated or is ongoing. For the remaining two restoration projects, securing permits, planning, and/or construction are underway. Completing restoration on the projects previously acquired was a major priority for the Fund in 2002. TNC's Wetland Restoration Specialist is primarily devoted to restoration plan development, project implementation, and monitoring. Having the Wetland Restoration Specialist on staff enabled TNC to make significant progress in 2003 toward completing restoration of projects already acquired, and provided major cost savings over subcontracting these tasks. These savings are applied to additional mitigation projects to further the public interest and to benefit Virginia's aquatic resources.

The Fund tracks its impacts, revenues, mitigation, and disbursements by HUC. However, the Fund maintains flexibility to allocate dollars to the best mitigation projects in order to obtain the most favorable mitigation value with these limited dollars. The Corps' Fund Manager ensures that when mitigation projects are approved outside of the HUCs (or adjacent HUCs) where payments into the Fund were generated, sufficient funds remain to mitigate for the impacts from all HUCs where funds were generated. The Fund does not allocate dollars to projects (out of impact HUCs) in amounts that will threaten the ability to mitigate for impacts in HUCs (or adjacent HUCs) where those impacts occurred. This flexibility allows for timing the acquisition of the best projects that provide the greatest benefit to the aquatic environment and public interest.

Table 3 provides information on the Fund's wetland mitigation projects, including the basin and HUC within which the projects are located and the acres and type of mitigation. Acreages that are estimated (have not been finally delineated and therefore are not based upon exact delineations) are underlined. The following explanations should be considered when

reviewing the data found in the columns:

Under the PROJECT NAME heading:

Name: A list of project names.

Under the LOCATION heading:

Basin: Basins are abbreviated. (LJ, Lower James; CH, Chowan; CB, Chesapeake Bay; RP, Rappahannock; YK, York; PO, Potomac)

HUC: Hydrologic Unit Codes where projects are located.

Under the RESTORATION heading:

Restoration Acquired: This refers to hydric soil wetland restoration acres, or wetland creation acres, that have been acquired but have not yet undergone construction measures. These acres are generally in the planning stage and are scheduled for restoration or are under construction contract negotiations.

Construction Completed: These are wetland restoration acres where restoration construction measures have been completed. Monitoring for mitigation success is being or has been initiated, and these areas will be evaluated over the prescribed monitoring period.

Restoration Final: These acres have been monitored and the wetland restoration has been determined to be successful and therefore have been released from further monitoring, except for long term stewardship monitoring for hydrology and habitat enhancement.

(RESTORATION) Upland Buffer: These are acres of upland buffer that required restoration from crop or cleared land to convert them to forested buffers.

Under the WTLND PRESERVATION heading:

Preserved: This column refers to wetland acres that have been acquired and will be preserved in perpetuity, generally with long term stewardship by TNC or others.

Enhanced: Acres of wetlands that were enhanced by hydrologic adjustment or invasive species eradication measures.

Upland Buffer: These acres refer to upland areas that were acquired along with acquisition of aquatic resources (generally) and are set aside or preserved as upland buffers.

Other: Mitigation types other than wetland restoration, wetland enhancement, wetland creation, buffer restoration, or buffer preservation, such as the oyster reef project.

The Corps and TNC track impacts and projects by HUC and evaluate projects based upon the "HUC plus adjacent HUC within same river basin" method with one exception. In some cases, mitigation sites outside of mapped HUC lines are considered tributaries to that HUC due

to hydrologic modifications, and those sites can be used as mitigation for the HUC with impacts. In these instances, the mitigation site is usually located close to the HUC line, and the Fund, after coordination with DEQ, may accomplish a mitigation project outside of the HUC line to mitigate for impacts within the HUC. One example is the Stephens tract in Chesapeake. Although it is 0.2 miles south of the 2080206 HUC line, it drains to the Dismal Swamp Canal, one of the largest tributaries to the Elizabeth River (HUC 2080206). Also, and where appropriate, the Fund strives to accomplish projects on different sub-watersheds within specific HUCs. Eleven different projects within HUC 3010205, including those on the Northwest River, Great Dismal Swamp, and Back Bay watersheds, demonstrate this concept. For information on hydrologic unit codes (HUCs), please refer to the following URL: (http://www.dcr.state.va.us/sw/hu.htm).

TABLE 3: 1995-2003 SPECIFIC WETLAND MITIGATION PROJECTS (in acres)

PROJECT NAME	LOCATION		RESTORATION				PRESERVE/ENHANCE			OTHER
Name	Basin	HUC	Restoration Acquired	Construction Completed	Restoration Final	Upland Buffer	Preserved	Enhancement	Upland Buffer	Other
Stephens Tract	LJ	2080208		70			112			
Walters Tract	LJ	2080206		22		13	210	10	27	
Lamb Tract	LJ	2080204	15			125				
Oyster Reef	LJ	2080208								0.3
Kellam Rigato	CH	3010205					160			
TidewaterChristian	CH	3010205					51			
Mayo Tract	CH	3010205					10		3	
Benefits Tract	CH	3010205		8			704	40	18	
Hall Tract	CH	3010205		25		6				
Su Tract	CH	3010205		56		4	73	30		
Bruff Tract	CH	3010205		2		8				
Knight Tract	CH	3010205		17		1				
Fentress Tract	CH	3010205		21		2				
Stephens Tract	CH	3010205		70			112			
Powers Tract	CH	3010205	25				100		47	
Dameron Marsh	CB	2080102		15		15	18		18	
Trimmer Tract	CB	2080102					16		16	
Eastern Va Phrag	CB/LJ	2080108						380		
Rappahan/Phrag	RP	2080104						80		
Po River	YK	2080105					15		5	
Nash/Chotank	PO	2070011	40				50		50	
Total Acres>			80	306	0	174	1631	540	184	0.3

In addition to the many acres of wetland restoration and protection, many of the above mitigation projects provide unique functions and values to Virginia's aquatic environment. First, the large size of many of the projects provides habitat for wildlife that depend upon large contiguous forest blocks that smaller sites do not provide. Second, a benefit of the partnership with TNC is that many of these sites are included as part of a planned and researched conservation plan with broad landscape and regional application. Third, many of these projects provide corridors to connect preserved habitat blocks to other habitat blocks. Some sites, such as the Po River tract, have significant historic resource preservation benefits. Others, such as Dameron Marsh, Benefits, and Nash/Chotank, are listed habitat sites for state and/or federal threatened and endangered species.

III. STREAMS

A. STREAM CONTRIBUTIONS RECEIVED

Impacts to wetlands and streams were divided into and treated as separate categories for mitigation purposes in approximately the 2001 timeframe. Since that time, **12** projects have used the Fund as mitigation for permitted stream impacts. The **12** permitted projects resulted in **9664** linear feet of stream impacts over the three years noted. For these stream impacts, the Fund accrued contributions totaling **$940,635**. The impacts, contributions, and number of permits using the Fund each year are shown in Table 4 below.

TABLE 4: STREAM IMPACTS, REVENUES, AND PERMITS BY YEAR

YEARS	IMPACTS (in linear feet)	REVENUES	# of PERMITS	AVERAGE IMPACT PER PERMIT
2001	5973	$550,285.80	6	995.50
2002	1115	$115,565.40	3	371.67
2003	2576	$274,785.00	3	858.67
3	**9664**	**$940,636.20**	**12**	**741.94**

B. IMPACTS, REVENUES, AND ALLOCATED FUNDS BY WATERSHED

The Corps and DEQ are developing a stream condition evaluation methodology to rate the condition of streams and stream mitigation projects. Until this methodology is finalized and approved, mitigation projects are listed in linear feet. The Fund has been used as mitigation for approximately **9,664** linear feet of stream impacts resulting in $940,636.20 in revenues. The Fund was not available as a mitigation option for stream impacts for the majority of 2003 and was used only sporadically in 2001 and 2002. In December of 2003, a new Memorandum of Understanding was signed, making the Fund again available for use as mitigation for stream impacts.

Table 5 shows basins, impacts, revenues, allocated funds, and linear feet of mitigation projects. The following explanations should be considered when reviewing the data found in the columns:

BASIN: The basin where the impacts or mitigation are located.

IMPACTS: These are linear feet of impacts to streams, regardless of the level of quality or condition of the stream being impacted.

REVENUES: Funds paid into the Trust Fund as mitigation for the impacts noted above.

ALLOCATED: Funds allocated to mitigation projects to compensate for stream impacts.

MITIGATION: Linear feet of all types of mitigation combined, regardless of type of mitigation. Table 6 breaks out mitigation projects by type and provides better detail.

TABLE 5. 1995-2003 STREAM IMPACTS, REVENUES, ALLOCATED FUNDS, AND MITIGATION

BASIN	IMPACTS	FINANCIAL INFORMATION		MITIGATION
BASINS	LINEAR FEET	REVENUES	ALLOCATED	LINEAR FEET
Atl Ocean	0	0.00	0.00	
Shenandoah	2,290	251,900.00	0.00	
Potomac	2,151	209,385.00	85,800.00	3,600
Ches Bay	843	64,702.20	0.00	
Rappahannock	0	0.00	101,594.00	21,747
York	92	6,920.80	0.00	
Upper James	0	0.00	0.00	
Mid James	3,400	304,708.20	385,000.00	11,200
Lower James	429	41,280.00	15,600.00	104
Roanoke	459	61,740.00	0.00	
Chowan	0	0.00	0.00	
New	0	0.00	0.00	
Tennessee	0	0.00	7,000.00	11,600
General				
TOTALS	**9,664**	**$940,636.20**	**$594,994.00**	**48,251**

C. STREAM MITIGATION PROJECTS

The Fund has six stream mitigation sites in its project portfolio located within a number of watersheds. All of them generally involve some level of restoration, stabilization, preservation, livestock exclusion or enhancement. Construction and planting have been completed on five of the six projects and monitoring is either ongoing or monitoring protocols are being developed. For the remaining restoration project, obtaining permits, planning, and contract negotiation are underway. Completing restoration on the projects previously acquired and acquisition of new stream mitigation sites are top priorities for the Fund. The Fund expects to hire a Stream Restoration Specialist in 2004, to be primarily devoted to restoration plan development, project implementation, and monitoring.

The Fund tracks its impacts, revenues, mitigation, and allocations by HUC. However, the Fund maintains flexibility to allocate dollars to the best mitigation projects in order to obtain the most favorable mitigation value with the dollars available. Despite this flexibility, the Corps' Fund Manager ensures that when mitigation projects are approved outside of the HUCs (or adjacent HUCs) where payments into the Fund were generated, sufficient funds remain to mitigate for the impacts from all HUCs where funds were generated. The Fund does not allocate dollars to projects (out of impact HUCs) in amounts that will threaten the ability to mitigate for impacts in HUCs (or adjacent HUCs) where those impacts occurred. This flexibility allows for acquisition of the best projects that provide the greatest benefit to the aquatic environment and public interest.

Table 6 provides information on the Fund's stream mitigation projects, including the basin and HUC within which the projects are located and the acres and type of mitigation provided for each project. Linear footages that are estimated (have not been finally delineated and therefore are not based upon exact delineations) are underlined. The following explanations should be considered when reviewing the data found in the columns:

Projects: A list of project names.

HUC: Hydrologic Unit Codes where projects are located.

Basin: Basins are abbreviated. (LJ, Lower James; TN, Tennessee; MJ, Middle James; RP, Rappahannock; PO, Potomac)

Restoration Acquired: This refers to stream restoration sites that have been acquired but have not undergone construction measures yet. These acres are generally in the planning stage and are scheduled for restoration or are under construction contract negotiations.

Restoration: These are sites where stream restoration construction measures have been completed. Monitoring for mitigation success is, has, or will be initiated, and these areas will be evaluated over the prescribed monitoring period.

Stabilization: These projects are not full scale stream restoration projects, but have undergone stream bank or channel stabilization measures.

Preservation: This column refers to streams that have been acquired and will be preserved in perpetuity, generally with long term stewardship by TNC or others.

Livestock Exclusion: This column refers to the linear feet of stream where existing livestock were fenced out of the stream to improve water quality and stream stability.

Enhancement: Streams that were enhanced by re-introduction of anadromous fish or invasive species eradication measures.

River Buffer Restoration: These are areas of upland buffer that required restoration from crop or cleared land to convert them to forested buffers, generally located along large rivers.

River Buffer Preservation: These are areas of upland buffer generally located along large

rivers that have been acquired and preserved.

Buffer Acres Restored: These are acres of upland buffer that required restoration from crop or cleared land to convert them to forested buffers.

Buffer Acres Preserved: These are areas of upland buffer that have been acquired and preserved.

TABLE 6: 1995-2003 SPECIFIC STREAM MITIGATION PROJECTS

PROJECTS	LOCATIONS		MITIGATION TYPES									
PROJECTS	HUC	Basin	Restoration Acquired	Restoration	Stabilization	Preservation	Livestock Exclusion	Enhancement	River Buffer Restoration	River Buffer Preservation	Buffer Acres Restored	Buffer Acres Preserved
Grays Island	6010205	TN	0	0		0		0	3000	8600	3	10
Cheswick Park	2080206	LJ	0	0	104	0			0	0	0	0
Lamb Tract	2080204	MJ	5200	0		0			6000	0	75	0
Nash Tract	2070011	PO	0	400	1200	200	1800	0	0	0	0	0
Linden Farm	2080103	RP	0	0		0		0	2000	0	3.4	30.92
Rap Fish Passes	2080104	RP	0	0		0		19747.2	0	0	0	0
TOTALS (lf)			**5200**	**400**	**1304**	**200**	**1800**	**19747.2**	**11000**	**8600**	**81.4**	**40.92**

The Corps and TNC track impacts and projects by HUC and evaluate projects based upon the "HUC plus adjacent HUC within same river basin" method with one exception. In some cases, mitigation sites outside of mapped HUC lines are considered tributaries to that HUC due

to hydrologic modifications, and those sites can be used as mitigation for the HUC with impacts. In these instances, the mitigation site is usually located close to the HUC line, and the Fund, after coordination with DEQ, may accomplish a mitigation project outside of the HUC line to mitigate for impacts within the HUC. For information on hydrologic unit codes (HUC), please refer to the following URL: (http://www.dcr.state.va.us/sw/hu.htm).

IV. OTHER REVENUES

In addition to revenues received as In-Lieu-Fee payments for wetland and stream impacts, the Trust Fund earns interest on its unspent funds. Through the end of 2003, the Fund earned a cumulative amount of **~$752,968.84** in interest. Although this form of revenue is not generated from direct wetland impacts and therefore is not associated with specific mitigation liability, it is held in the Fund account and is available to the Fund to accomplish mitigation projects. In fact, the proceeds from interest have been used for and in support of various mitigation projects, including some projects that are unique or innovative, and that provide mitigation value. Also, many of the wetland preservation acres acquired by the Fund (**1631** acres to date) have been purchased with funds amounting to less than the Fund's total interest earnings.

V. MONITORING AND STEWARDSHIP

Monitoring mitigation projects is critical to the determination of overall mitigation success. Accordingly, the Corps, in consultation with TNC's staff and Monitoring Specialist, developed a monitoring protocol in 2001 that is applied to all wetland restoration projects. The protocol outlines the process for developing monitoring plans on a site-specific basis. Since stream mitigation projects are new to the Fund, a stream project monitoring protocol will be developed in the near future. Below is a brief overview of the wetland monitoring protocol.

Several hydrological monitoring tools may be used during monitoring including shallow groundwater hydrology wells, peizometers and staff gauges, depending upon which aspect of hydrology is to be assessed. Typically, the use of shallow groundwater hydrology wells is used because it directly addresses hydrological criteria set forth by applicable US Army Corps of Engineers and Department of Environmental Quality regulations and guidance. Trust Fund wetland restoration projects are generally monitored for shallow groundwater hydrology using automatic reading wells that record depth to water table data on a daily basis. This is to provide the highest quality data and to eliminate the subjectivity present in manually read wells, where the recommended interval between readings is weekly during the growing season and monthly during the non-growing season. Automatic reading wells also provide robust data sets that aid in analyzing and comparing daily precipitation data for normal circumstances determinations. Lastly, these data may provide a basis from which the study of wetland hydrology can be advanced. Well locations are approved by the Norfolk District Corps. Hydrology monitoring is generally conducted for five years, with reduced numbers of well stations left in place for extended durations of time to provide long term monitoring information to better understand the hydrologic evolution of restoration sites.

The Trust Fund implements a number of different vegetative restoration strategies including bare-root seedling installation, weed mats, tree shelters, invasive species control,

installation of aggressive canopy closers (e.g. black willow), and no-plant alternatives. These different re-vegetation strategies require differing sampling methods and frequencies. The Trust Fund employs standard, accepted sampling methodologies for assessing vegetation at all restoration sites. These include quantitative methods (e.g. plot/transect methods) and qualitative (e.g. professional observations) depending upon the objective.

Soils are typically mapped as hydric versus non-hydric in the early stages of project development. If non-hydric areas are significantly hydrated as a result of restoration activities, they will be monitored to determine if they become reduced. Generally the guidelines approved by "Field Indicators of Hydric Soils in the Mid-Atlantic United States", "US Army Corps of Engineers 1987 Wetland Delineation Manual" or other acceptable source for identification of hydric soils or hydric soil indicators is used.

All restoration sites are either under the long-term stewardship of the Conservancy or some other qualified natural resource entity (e.g. DCR, USFWS, VOF) either through ownership or through conservation easement. Stewardship is an important aspect of any restoration project, and The Nature Conservancy is uniquely qualified to address the challenges of successful long-term management. Such challenges include access, trespass, vandalism, invasive species control, pest and vector management, and local landowner appeasement and education. Frequent site visits by wetland professionals and the use of volunteers to aid in certain aspects of monitoring provide beneficial information regarding the progression and condition of Trust Fund sites.

Although the Fund does not pay for academic research studies, its sites are made available for scientific research studies as long as the studies do not interfere with mitigation efforts. Two such studies have been conducted at Trust Fund sites in Chesapeake, including one review of soil temperature and growing season supervised by Dr. Gallbraith of Virginia Tech, and one small mammal study supervised by Dr. Rose of Old Dominion University.

VI. CONCLUSION AND PARTNERS

The above projects demonstrate that the Fund has made significant progress toward accomplishing its goal of providing watershed-based mitigation for permitted impacts, along with enhancing the preservation and restoration of Virginia's aquatic resources. By combining the mitigation contributions from multiple permit applicants, the experience and land acquisition abilities of TNC, mitigation expertise of the Corps and TNC, and by enlisting partners such as Friends of the Rappahannock, The Central Virginia Battlefields Trust, Virginia Commonwealth University, Henrico County, James City County, the Virginia Marine Resources Commission, Virginia Department of Game and Inland Fisheries, Virginia Division of Natural Heritage, the Chesapeake Bay Foundation, the Fund is in a advantageous position to bring significant mitigation projects to completion. Corps Project Managers reviewing permit specific mitigation proposals often spend significant time reviewing proposed mitigation plans and visiting proposed mitigation sites for acceptability and compliance. By pooling mitigation dollars of many small projects into several larger projects, considerably less staff time is spent reviewing mitigation sites for compliance.

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